

**Population Aging and Macroeconomics:
Aide Memoire from Seminar Held at Harvard University's
Program on the Global Demography of Aging**

**Meeting Held at the Harvard Initiative for Global Health
Cambridge, Massachusetts
June 6-7, 2005**

Background and objective

The meeting was held in recognition of the fact that the implications of population aging for aggregate economic performance is emerging as an area of intense academic and policy interest. Such interest is evidenced by conferences last year in Jackson Hole and in Paris (the G20 meeting) and by upcoming G20 meetings this year in Pretoria and next year in Sydney.

The objective of the meeting was to take stock of what we know about the links between population aging and macroeconomics in order to help the National Institute of Aging (NIA) define key issues and identify the most promising research opportunities related to macroeconomics and aging.

The agenda for the meeting, the list of participants, and a list of scholars working in the area of macroeconomics and aging (who constitute possible future participants in this work) appear at the end of this note.

Discussion at the meeting

Meeting participants reviewed basic facts about population aging in a global context: the size of the 60+ and 80+ populations, the health of the elderly, and variations across countries. In conjunction with this review, they noted the variety of demographic forces in operation: the demographic transition due to increased life span and fertility declines, the post World War II baby booms, and migration. All agreed that the world is entering substantially uncharted waters in terms of the size of elderly populations and that so far we lack research that would offer a guide as to what macroeconomic consequences can be expected to flow from this new demographic picture.

Participants noted the relevant literature and discussed what is known about the links between population aging and macroeconomic performance, and how this topic might best be studied. It seems likely that the links between population aging and macroeconomics are mediated by the institutional context (e.g., retirement policy and pension and health care systems) and the economic context (e.g., degree of integration into regional and global economies). A first-order approach to assessing the implications of population aging would be to assume constant age-specific behavior. However, this would likely be misleading, because behavioral and feedback effects are likely to influence the economic consequences of aging. In addition, behavioral adjustments to population aging may vary with stage of development. Studies will therefore need

to take a country's stage of development into account when assessing how people's behavior is changing in reaction to aging. An aging electorate may also influence policy, as its needs and interests differ somewhat from those of younger people.

Discussants at the meeting emphasized that aging was a global phenomenon with developing countries such as China and India being well into their demographic transitions and facing the prospect of rapidly aging populations in the next thirty years. When looking at international issues such as labor migration and capital flows it is important to keep national demographic pictures in view, as well as their global context.

Specific research ideas

Participants identified six key sets of issues and promising theoretical and empirical research opportunities for consideration by NIA:

- (1) *Demographic forecasting*: The study of the macroeconomic implications of aging requires accurate forecasts of demographic time series. Future age structures can be forecast directly or by combining forecasts of age-specific fertility, mortality, and international migration. Forecasting can be carried out using time series methods, expert opinion, or innovative structural methods. Specific research topics might include:
 - a. Forecasts of age-specific morbidity patterns, with the goal of estimating future labor supply and demand for health care.
 - b. Clarification of the degree to which uncertainty in demographic forecasts complicates predictions about economic behavior and macroeconomic performance.

- (2) *Savings, investment, and finance*: Future population aging is expected to require increased current savings to finance more person-years spent living in partial or full retirement. The expected savings boost will affect financial markets, rates of return, and thereby investment. Net transfers across generations may also adjust. International capital flows will also be affected, especially insofar as different countries' demographic cycles are out of phase. It is important to understand the magnitudes of these effects. Specific research topics include:
 - a. The design of mechanisms to facilitate individual savings.
 - b. Methods for dealing with the problem of systemic risk in financial markets, in order to ensure adequate financing for the retirement needs of the elderly.
 - c. Rates and patterns of dissaving in the presence of population aging, and the phenomena of asset inertia relative to the predictions of the life cycle model.
 - d. Macro implications of age patterns in bounded rationality.
 - e. Estimation of the marginal propensity of the elderly to consume from different sources of wealth (i.e., with various levels of liquidity).
 - f. Measurement, determinants, and implications of age-specific patterns of wealth portfolio adjustments.
 - g. The effect of changes in aggregate saving on investment and rates of return.

- h. Many national level models predict that demographic change has little effect on long run rates of return because of the presence of a global capital market. To what extent will global demographic change affect world interest rates?
- (3) *Labor, human capital, and migration:* Population aging will likely cause reductions in aggregate labor supply and will change the composition of the labor force (particularly as measured by worker experience). One might also expect an increase in the general level of wages and a fall in unemployment rates, along with an increase in the demand for labor-intensive foreign goods and certain services (e.g., medical tourism). The prospect of labor shortages may also have large effects on the incentives for education and immigration and the development and reliance on new capital-intensive technologies. Specific research topics include:
- a. An examination of the extent to which accounting effects (based on applying an aging population to current age specific participation rates) may be offset by behavioral changes in retirement behavior, female labor supply, and part-time work patterns. In particular, it would be useful to explore, both theoretically and empirically, the extent to which increased longevity may be expected to result in longer working lives, increases in hours worked, and the related effects on all these outcomes of mandatory retirement and overtime pay premia.
 - b. The degree to which migration can offset population aging. To the extent that countries will rely on different mixes of policies and market mechanisms to cope with population aging it is interesting for policy purposes to examine the tradeoffs that occur; for example how much migration would be required to obviate a one year increase in the age of retirement?
 - c. The economic growth implications and the welfare implications of the trends cited here.
 - d. Changes in the world division of labor in the face of global aging.
- (4) *Changes in sectoral structure:* The health and long-term elder care sectors are likely to expand with population aging. The outputs of these sectors are largely non-traded and labor-intensive, and may have a low rate of technical progress. There are accounting as well as economic analysis issues here, particularly in regard to accounting for health care in the national income accounts and measuring technical progress. Specific research topics include:
- a. An assessment of the manner and extent to which the expansion of the health and long-term elder care sectors will affect the structure of the economy and economic growth.
 - b. A welfare analysis that values the outputs of the health care and long-term elder care sectors, rather than the usual income accounting treatment in which the sectors are valued mainly in terms of the cost of their inputs. Such an analysis would assess the true (versus the traditionally measured) productivity of the health care sector and the implications of the growth of this sector.
 - c. A forecast of the expansion of the health care sector, along with the need for workers in the health sector and financing requirements.
 - d. An estimation of how much extra health will be produced by expansion of the health sector, under different assumptions about technological progress.

- (5) *Public and private financing of pensions and healthcare:* Financing of old-age pensions and healthcare costs involves both macro and micro issues, whose implications for macroeconomic performance and competitiveness deserve exploration. Specific research topics include:
- a. How reliance on company provision of health care and pension benefits may affect the competitiveness of firms and increase international outsourcing. Consideration of how these issues vary significantly by stage of development.
 - b. The design, sustainability, and intergenerational equity of public and private pension systems, and the political economy of policymaking in this area.
 - c. The degree to which population aging will burden public sectors in different countries, with and without assumptions of likely or possible behavioral feedback effects.
 - d. Identification of which segments of the population will bear the expense of health sector expansion.
 - e. The implication of different financing methods for the rate of economic growth.
- (6) *Economic growth:* Forecasts of economic growth play an essential part in estimating the financial burden of population aging. To the extent that the factors discussed above affect economic growth, then growth rates are endogenous. Long-run prospects for economic growth can be affected by labor supply, domestic investment, net inflows of foreign direct investment, and technological progress, all of which can be influenced by population aging. Specific research topics include:
- a. The effect of changing population sizes and age structures on the output (GDP) of individual countries and the world,
 - b. A comparison of the effects of population on productive capacity with the expected realization of that capacity.
 - c. The effects of population aging on the distribution of income across and within countries.

The Program on the Global Demography of Aging
Aging and Macroeconomics Workshop
Harvard School of Public Health

Agenda

Monday, June 6, 2005
EVOO
118 Beacon Street, Somerville, MA
617-661-3866

6:30 – 7:00 **Refreshments**

7:00 **Dinner**

Tuesday, June 7, 2005
Harvard Initiative on Global Health, 3rd Floor
104 Mount Auburn Street, Cambridge, MA

8:30 – 9:00 **Continental Breakfast**

9:00 – 9:30 **Welcome**
David Bloom
Richard Suzman

9:30 – 10:00 **Core Issues of Macroeconomics and Aging**
David Canning (informal presentation)

10:00 – 11:00 **Discussion of Thematic Priorities**

11:00 – 11:15 **Break**

11:15 – 12:15 **Discussion: Aging, Labor, Savings, and Human Capital**
David Bloom (moderator)

12:15 – 1:15 **Discussion: Aging, Institutions, and Economic Growth**
David Bloom (moderator)

1:15 – 2:00 **Lunch and Wrap Up**

2:00 **Adjourn**

The Program on the Global Demography of Aging
Aging and Macroeconomics Workshop
Harvard School of Public Health

Participants:

David Bloom, (Harvard University), dbloom@hsph.harvard.edu
David Canning (Harvard University), dcanning@hsph.harvard.edu
David Cutler (Harvard University), dcutler@harvard.edu
Robert Fogel (University of Chicago), donna.harden@chicagogsb.edu
David Laibson (Harvard University), dlaibson@harvard.edu
Cassio Turra (Princeton University), cturra@Princeton.EDU
Richard Suzman (NIA), rs52u@nih.gov
John Phillips (NIA), phillipj@nia.nih.gov

Invited but could not attend:

Axel Boersch-Supan (Universtiy of Mannheim), axel@boersch-supan.de, boersch-supan@mea.uni-mannheim.de
Robert Hall (Stanford University), rehall@stanford.edu
Elayne Heisler (NIH), eh164@nih.gov, heislere@mail.nih.gov
Chad Jones (UC Berkley), chad@econ.berkeley.edu
Ronald Lee (UC Berkeley), rlee@demog.berkeley.edu
Robert Lucas (University of Chicago), relucas@uchicago.edu
James Poterba (MIT), poterba@MIT.EDU
Samuel Preston (University of Pennsylvania), spreston@falcon.sas.upenn.edu
James Vaupel (Max Planck Institute for Demographic Research), jwv@demogr.mpg.de
David Weil (Brown University), David_Weil@brown.edu
David Wise (Harvard University), david_wise@harvard.edu
Alwyn Young (Chicago University), alwyn.young@gsb.uchicago.edu

Broader list:

Orazio Attanasio (University College London), o.attanasio@ucl.ac.uk
Alan Auerbach (UC Berkeley), auerbach@econ.berkeley.edu
Michele Boldrin (University of Minnesota), mboldrin@econ.umn.edu
James Banks (University College London), j.banks@ucl.ac.uk
Robert Barro (Harvard University), rbarro@harvard.edu
Jere Behrman (University of Pennsylvania), jbehrman@econ.upenn.edu
B. Douglas Bernheim (Stanford University), bernheim@stanford.edu
Richard Blundell (University College London), r.blundell@ucl.ac.uk
Jorge Bravo (UC Berkeley), jjbravo@uclink4.berkeley.edu
Agar Brugiavini (University Ca' Foscari of Venice), brugiavi@unive.it
Andrew Caplin (New York University), andrew.caplin@nyu.edu
Christopher Carroll (Johns Hopkins University), ccarroll@jhu.edu
Anne Case (Princeton University), accase@princeton.edu
Dora Costa (MIT), costa@mit.edu
Nicholas Crafts (London School of Economics), n.crafts@lse.ac.uk
Angus Deaton (Princeton University), deaton@princeton.edu

Peter Diamond (MIT), pdiamond@mit.edu
Richard Easterlin (University of Southern California), easterl@usc.edu
Ryan Edwards (RAND), redwards@rand.org
Ray Fair (Yale University), ray.fair@yale.edu
Martin Feldstein (Harvard University), mfeldstein@harvard.edu
Nicola Fuchs-Schuendeln (Harvard University), nfuchs@harvard.edu
Alan Garber (Stanford University), garber@stanford.edu
Dana Goldman (UCLA/RAND), dana_goldman@rand.org
Jonathan Gruber (MIT), gruberj@mit.edu
Peter Heller (IMF), pheller@imf.org
Michael Hurd (RAND), Michael_Hurd@rand.org
Erik Hurst (University of Chicago/NBER), erik.hurst@gsb.uchicago.edu
Dean Jamison (UCLA), jamison@mail.nih.gov, jamison@gseis.ucla.edu
Donald Johnston (OECD), Donald.JOHNSTON@oecd.org
Daniel Kahneman (Princeton University), kahneman@princeton.edu
Larry Kotlikoff (Boston University), kotlikof@bu.edu
Alan Krueger (Princeton University), akrueger@princeton.edu
David Lam (University of Michigan), davidl@umich.edu
John Leahy (University College Dublin), dermot.m.leahy@ucd.ie
Wolfgang Lutz (Vienna Institute of Demography), wolfgang_lutz@yahoo.com
Andrew Mason (University of Hawaii), amason@hawaii.edu
Kathleen McGarry (UCLA), mcgarry@econ.ucla.edu
David Miles (Financial Services Authority), d.miles@ic.ac.uk
Michael Moore (Queen's University, Belfast), m.moore@qub.ac.uk
Kevin Murphy (University of Chicago), kevin.murphy@gsb.uchicago.edu
William Nordhaus (Yale University), william.nordhaus@yale.edu
Jonathan Parker (Princeton University), jparker@Princeton.edu
Tomas Philipson (University of Chicago), t-philipson@uchicago.edu
Kenneth Rogoff (Harvard University), krogoff@harvard.edu
Jeffrey Sachs (Earth Institute, Columbia University), sachs@columbia.edu
Emmanuel Saez (UC Berkeley), saez@econ.berkeley.edu
Andrew Samwick (Dartmouth), Andrew.A.Samwick@Dartmouth.EDU
Jonathan Skinner (Dartmouth), Jonathan.S.Skinner@Dartmouth.EDU
Joel Slemrod (University of Michigan), jslemrod@umich.edu
John Strauss (University of South Carolina), jstrauss@email.usc.edu
Miguel Szekely, miguels@iadb.org
Duncan Thomas (UCLA), dt@ucla.edu
Robert Topel (University of Chicago), bob.topel@gsbsun.uchicago.edu
Shripad Tuljapurkar (Stanford University), tulja@mvr.org
Jeffrey Williamson (Harvard University), jwilliam@fas.harvard.edu